

IN THE MATTER OF
Patent Application of
FUJI PHOTO FILM CO., LTD.

I, Shinichi MIZOI, 1-9-23-203, Kamijujo Kita-ku, Tokyo 114-0034, Japan, do hereby declare that I am conversant with the Japanese and English languages and am a competent translator thereof. I further declare that to the best of my knowledge and belief, the following is a true and correct translation, made by me, of the official copy of the document in respect of a Patent Application No. 10-232903 filed in Japan on August 19, 1998.

Signed this 9th day of November, 2004

By 

Shinichi MIZOI

(Translation)

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[DOCUMENT NAME] Specification

[TITLE OF THE INVENTION]

COLOR CONVERTING APPARATUS

5 [CLAIMS]

[Claim 1]

10 A color converting apparatus comprising a color
converting means for converting device-dependent input image
data to device-dependent input image data for a proof image
outputting apparatus for confirming the colors of an image
to be printed on a print sheet based on said device-
dependent input image data with said proof image outputting
apparatus before the image is actually printed,

15 wherein when said color converting means comprises a
merged color converting means merging a printing condition
color converting means for converting device-dependent input
image data to device-independent image data in view of
printing conditions and an output condition color converting
means for converting said device-independent image data to
20 device-dependent input image data in view of conditions of
said proof image outputting apparatus,

said color converting apparatus has a merged color
converting means storage area for storing a merged color
converting means as files,

25 a not-to-be-merged printing condition color converting
means storage area for storing printing condition color
converting means not to be merged as files,

an output condition color converting means storage area for storing said output condition color converting means as files,

a file moving means for moving files,

5 a file merging means for merging files,

wherein when the file of printing condition color converting means stored in said not-to-be-merged printing condition color converting means storage area is moved to said merged color converting means storage area by said file moving means,

said file merging means automatically merges the file of the printing condition color converting means to be moved with the file of the output condition color converting means into a new file of the merged color converting means and stores the new file in said merged color converting means storage area.

[DETAILED EXPLANATION OF THE INVENTION]

[0001]

[TECHNICAL FIELD TO WHICH THE INVENTION PERTAINS]

20 The present invention relates to a color converting apparatus for use in a proof generating system for generating a color proof carrying a color image on a proof sheet for examining colors and making color corrections, with a proofer which is an image outputting device such as a color printer or the like before a colored printed material with a color image printed on a print sheet is produced by a color printing machine such as a rotary press.

[0002]

[PRIOR ART]

It has heretofore been customary in the art of printing and platemaking to generate a color proof carrying a color image on a proof sheet for examining colors and making color corrections, with a proofer such as a color printer or the like before a colored printed material with a color image printed on a print sheet is produced as a final finished product by a color printing machine such as a rotary press.

[0003]

The proofer is used because it does not require films and printing plates that would be needed by printing machines and can easily generate as many hard copies carrying color images on proof sheets, i.e., color proofs which are to be printed by a printer, as required at a low cost within a short period of time.

[0004]

To form a color image for use as a color proof on a proof sheet, image data dependent on devices such as a printer, a photographic camera, an image sensor, a CRT, an LED, etc., e.g., C (Cyan), M (Magenta), Y (Yellow), B (Black) image data, are converted to colorimetric data that are device-independent image data, i.e., X, Y, Z (stimulus) image data by a standard printing profile such as a four-dimensional lookup table (LUT) or the like that are provided by the manufacturer. Then, a color proof carrying a color image on a proof sheet is produced by a proofer such as a

color printer according to a proof profile, e.g., a printer profile (three-dimensional lookup table).

[0005]

5 The color proof thus produced by the proofer such as a color printer simulates the colors of a colored printed material to be produced by a color printing machine for confirming the colors prior to an actual printing process carried out by the color printing machine.

[0006]

10 [TASK TO BE SOLVED BY THE INVENTION]

In order to generate a color proof with a proofer which is an image outputting device, as described above, it is necessary to convert device-dependent image data to device-independent image data with a printing condition profile as a printing condition color converting means, and then to
15 convert the device-independent image data to device-dependent image data with a printer condition profile as an output condition color converting means and input the device-dependent image data to the image outputting device.

20 [0007]

Heretofore, it has been the practice to perform separate computerized processing operations to effect a color conversion process with the printing condition color converting means and a color conversion process with the
25 output condition color converting means. Therefore, these color conversion processes have been time-consuming.

[0008]

The inventors have decided that the color conversion processes are time-consuming primarily because two processing procedures are required, i.e., input image data are converted to output image data by the printing condition color converting means, and thereafter the output image data are supplied as input image data to the output condition color converting means, which converts the supplied input image data to desired output image data.

[0009]

Another reason for the time-consuming color conversion processes is that a highly specialized professional skill is needed to perform the computerized processing operations.

[0010]

It is therefore an object of the present invention to provide a color converting apparatus which is capable of simply and easily generating a combined color converting means for color conversion.

[0011]

Another object of the present invention is to provide a color converting apparatus which is capable of generating only a desired merged color converting means.

[0012]

[SOLUTION FOR THE TASK]

According to the present invention, when the file of printing color converting means stored in the not-to-be-merged printing color converting means storage area is moved to the merged color converting means storage area by the

file moving means, the file merging means automatically merges the file of the printing color converting means to be moved with the file of the output condition color converting means into a new file of the merged color converting means and stores the new file in the merged color converting means storage area.

[0013]

Because the file is moved by the moving means, and merged automatically, files of a merged color converting means for color conversion can easily be generated in a simple operation. Further, because the file of the output condition color converting means is merged with only the file of the printing condition color converting means that has been moved to the storage area, into a new file of a merged color converting means, only the desired file of the merged color converting means can be generated.

[0014]

By using the file of the merged color converting means thus generated, it is possible to convert device-dependent input image data to device-dependent image data for a proof image outputting device in one process (in a short period of time).

[0015]

[MODE FOR CARRYING OUT THE INVENTION]

FIG. 1 shows in block form a proof system 10 according to an embodiment of the present invention.

[0016]

The proof system 10 basically comprises a workstation (W/S) 12 functioning as a page make-up apparatus, a host computer 14 functioning as a color converting apparatus, and a printer 16 functioning as a proof image outputting apparatus (proofer).

[0017]

The workstation 12 edits characters, line drawings, and images captured by a scanner or the like (not shown) on an image displayed on a display unit (not shown), and generates PDL (Page Description Language) data descriptive of one page of image information including positional information, color and density information, etc.

[0018]

The generated PDL data is supplied to a raster image processor (RIP) 18 of the host computer 14. The raster image processor 18 develops the PDL data into image data in C, M, Y, K, i.e., device-dependent input image data, as scanning image data.

[0019]

The host computer 14 comprises a main section including the raster image processor 18, a color converter (color converting means) 20 having color conversion LUTs (Look Up Tables) as merged color converting means, and a color corrector 22 functioning as a display control means, a manual command input unit 24 including a keyboard, a mouse 24M, etc. and connected to the color corrector 22, and a display unit 26 comprising a color CRT display unit or the

like.

[0020]

FIG. 2 shows the color converter 20 in detail. The color converter 20 converts C, M, Y, K image data (device-dependent image data) supplied from the raster image processor 18 to R, G, B image data (device-dependent image data) for the printer 16 with a printing condition profile (printing condition color converting means) 28 and a printer condition profile (output condition color converting means) 30. Actually, the printing condition profile 28 and the printer condition profile 30 are merged into a merged profile (merged printing condition printer condition profile, merged color converting means, merged profile LUT) 21 as a single lockup table. Therefore, the C, M, Y, K image data supplied to the color converter 20 are converted directly to the R, G, B image data for the printer 16 in one process by the merged profile LUT 21.

[0021]

When the R, G, B image data are supplied to the printer 16, the printer 16 outputs a hard copy HC (see FIG. 1) as a color proof carrying a color image 1M on a color paper CP that serves as a dedicated color proof sheet.

[0022]

In FIG. 2, the printing condition profile (printing condition color converting means) 28 serves as a color converting means including a color conversion table (four-dimensional-to-three-dimensional conversion lookup table) 32

for effecting conversion between colors depending on a device (a printer, inks, etc.), on a printed material produced by a printing machine (not shown) which is to be simulated by an image IM on a hard copy HC outputted as a proof by the printer 16, and colors not depending on a device, such as colorimetric values or the like.

[0023]

The color conversion table 32 serves as a printing condition color converting means for converting device-dependent input image data to device-independent input image data in view of printing conditions (inks, print sheets, printing machine types, etc.).

[0024]

The color conversion table 32 is given in advance by the manufacturer. The color conversion table 32 is a table of colorimetric values against halftone dot % data of C, M, Y, K that are changed at certain intervals. For example, if a table of colorimetric values against halftone dot % data of C, M, Y, K that are changed at intervals of α % is to be produced, then it is necessary to determine colorimetric values of as many colors as the fourth power of β with respect to the four colors of C, M, Y, K when the halftone dot % value is changed from 0 to α to 2α to, ..., to 100 % in β steps. Actually, however, several hundred characteristic colors of those colors are printed as a color chart on a standard print sheet by a standard printing machine, and then colorimetrically measured to generate a

colorimetric value table, i.e., a standard color conversion table 32. The color conversion table 32 is also called a printing condition profile core as it is a core of the printing condition profile 28.

5 [0025]

The printer condition profile 30 is a color converting means including a color conversion table for effecting color conversion between device-independent colors such as colorimetric values or the like, and device-dependent colors on a hard copy HC outputted from the printer 16. The printer condition profile 30 can be referred to as an output condition color converting means for converting device-independent image data converted by the printing condition profile 28 to device-dependent image data which have taken into account conditions of the printer 16 as a proof image output device.

15 [0026]

For generating the printer condition profile 30, the value of each of the R, G, B image data supplied to the printer 16 is changed at given intervals from the 0 level to the maximum level, and color patches produced by combinations of the changed colors of R, G, B are formed on the color paper CP. Then, the color patches on the color paper CP are measured by a colorimeter to determine X, Y, Z colorimetric data, and a conversion table between the inputted R, G, B image data and the outputted X, Y, Z colorimetric data is generated. The generated conversion

table is then inversely converted back and interpolated, if necessary, to produce a printer condition profile 30 as an LUT for converting X, Y, Z colorimetric data to R, G, B image data.

5 [0027]

In the printing condition profile 28, C, M, Y, K image data (C, M, Y, K) are converted to gradation-converted C, M, Y, K image data (C', M', Y', K') by one-dimensional LUTs (tone curve adjusting LUTs) 41, 42, 43, 44 each incorporating a tone curve {a curve for converting input gradation values in a range from 0 to 100 % to output gradation values (halftone dot %) in a range from 0 to 100 %}. The gradation-converted C, M, Y, K image data (C', M', Y', K') are then converted to colorimetric data (X, Y, Z) by the color conversion table 32. The colorimetric data (X, Y, Z) converted to colorimetric data (X', Y', Z') by one-dimensional LUTs 51, 52, 53 for base color correction.

15 [0028]

Reasons for the need for the one-dimensional LUTs 41, 42, 43, 44 for tone curve adjustment and the one-dimensional LUTs 51, 52, 53 for base color correction will briefly be described below.

[0029]

Printing conditions vary depending on many parameters including inks, print sheets, and printing machine types, and, even if these parameters are of the same kind, other parameters including production lots thereof and

25

environmental temperatures at which images are printed.
Therefore, the printing conditions of the color conversion
table 32 which is a standard printing condition profile core
provided by the manufacturer are never in accord with
5 desired printing conditions of a printing machine which the
user actually uses. It is thus necessary to adjust the
color conversion table 32 according to the actual desired
printing conditions, rather than the standard printing
condition profile.

10 [0030]

Inasmuch as the types of inks and print sheets that are
in general use are limited, sheet colors and solid ink
colors are relatively stable under different printing
conditions. However, intermediate tones may change greatly
15 depending on conditions in which images are printed by the
actual printing machine. In order to simply adjust such
intermediate tones, the C, M, Y, K one-dimensional LUTs 41,
42, 43, 44 for adjusting the C, M, Y, K tone curves (also
referred to as gradation characteristics or dot gains) are
20 inserted in front of the color conversion table (four-
dimensional-to-three-dimensional conversion lookup table) 32
for carrying out halftone dot % conversion from C to C', M
to M', Y to Y', and K to K' for tone correction.

[0031]

25 The LUTs 51, 52, 53 for base color correction are
tables for correcting the difference between the base color
of a sheet to be used by the printing machine (not shown)

and the base color of a sheet used to print color patches thereon which have been used to generate the color conversion table 32. The base color difference represents a colorimetric value difference produced when sheets of art paper from different lots are colorimetrically measured by a colorimeter or the like.

[0032]

Actually, the printing condition profile 28 and the printer condition profile 30 are merged by a profile manager 56 of the color corrector 22, and established as merged profile LUT 21 which is a single lookup table in the color converter 20.

[0033]

To the profile manager 56 of the color corrector 22, there are connected a profile storage unit 58 as a mass storage unit for storing the printing condition profile 28 and the printer condition profile 30.

[0034]

FIG. 3 shows an arrangement of the profile manager 56 and the profile storage unit 58.

[0035]

The profile storage unit 58 has a merged profile storage area (merged color converting means storage area) 58A for storing merge profile LUT 21 which is a merged color converting LUT (merged color converting means) to be merged as files, a not-to-be-merged printing condition profile storage area (not-to-be-merged printing color converting

means storage area) 58B for storing printing condition profiles (printing color converting means) 28 not to be merged as files, and a printer condition profile storage area (output condition color converting means storage area) 58C for storing the printer condition profile (output condition color converting means) 30, which is a proofer condition profile, as a file.

[0036]

Each of the storage areas 58A through 58D functions as a folder capable of storing a plurality of files. In this embodiment, the merged profile storage area 58A serves as a "PRINTING CONDITION~~W~~USED FOR OUTPUT" folder, the not-to-be-merged printing condition profile storage area 58B as a "PRINTING CONDITION~~W~~UNUSED" folder, and the printer condition profile storage area 58C as a "PRINTING CONDITION" folder.

[0037]

The profile manager 56 has a file manager 56C for managing files stored in the profile storage unit 58, a movement decision unit 56B for deciding whether the file of a printing condition profile 28 stored in the not-to-be-merged printing condition profile storage area 58B has been moved to the merged profile storage area 58A by a file moving means (described later on), and a merging processor 56A as a merging means which automatically merges the file of the printer condition profile stored in the printer condition profile storage area 58C with the to-be-merged

printing condition profile 28 into the file of a new merged profile (merged color converting means), and stores the new merged profile in the merged profile storage area 58A.

[0038]

5 As shown in FIG. 1, to the profile manager 56, there are connected a tone curve adjuster 60 for adjusting or correcting the data in the LUTs 41, 42, 43, 44, and a base color adjuster 62 for adjusting or correcting the data in the LUTs 51, 52, 53.

10 [0039]

The color corrector 22 also has a tone curve interpolator 64 which is used when the data is adjusted or corrected by the tone curve adjuster 60.

[0040]

15 The color corrector 22 further includes a graphical user interface (GUI) 66 connected to the base color adjuster 62, tone curve adjuster 60, the tone curve interpolator 64, the display unit 26, and the manual command input unit 24.

[0041]

20 The user manipulates an image displayed on the display screen of the display unit 26 with the manual command input unit 24 via the GUI 66 for making various adjustments such as tone curve adjustments, base color adjustments, etc. in a user-friendly control environment. In this embodiment, the
25 mouse 24M, the GUI 66, the display unit 26, and the profile manager 56 jointly serve as the file moving means for moving files. Alternatively, only the mouse 24M may be considered

as the file moving means.

[0042]

R, G, B image data converted from C, M, Y, K image data
by the color converter 20 are supplied as scanning image
5 data to the printer 16.

[0043]

The printer 16, which is of the laser exposure, thermal
development and transfer type, has three semiconductor
lasers which emit respective light beams that have been
10 intensity-modulated by the respective R, G, B image data.
The emitted light beams are applied to a donor (not shown)
to form a latent image thereon. The donor exposed to the
light beams is then wetted with a small amount of water, and
an image receiver sheet is applied to the donor and heated
15 to develop the latent image. Dyes produced by the image
development are transferred as a visible color image to the
image receiver sheet. After the color image has been
transferred to the image receiver sheet, the image receiver
sheet, which is the color paper CP onto which the image IM
20 has been transferred, is peeled off the used donor, thus
providing a hard copy HC as a high-quality color print.

[0044]

A process of generating a new merged profile LUT 21
will be described below with reference to the flowchart
25 shown in FIG. 4.

[0045]

First, the user selects an image for selecting printing

conditions via the manual command input unit 24, whereupon an image 200 for selecting printing conditions as shown in FIG. 5 is displayed on the display unit 26 in step S1.

[0046]

5 Then, the user selects a folder "USED FOR OUTPUT" from a left column in the image 200 for selecting printing conditions in step S2.

[0047]

10 A list of files stored in the folder "USED FOR OUTPUT" is now displayed. Stated otherwise, bibliographical items such as file titles, etc. of the merged profiles stored in the merged profile storage area 58A (see FIG. 3) are displayed.

[0048]

15 In FIG. 5, file titles "ART PAPER PRINTING", "COMPATIBLE WITH ART PAPER COMPANY A", "COMPATIBLE WITH ART PAPER COMPANY B" and "MAT PAPER PRINTING" are already set forth in a file title column, and these file titles are accompanied by comments "FUJI FILM STANDARD PRINTING
20 CONDITION", "ART PAPER PRINTING CONDITION FOR COMPANY A", "ART PAPER PRINTING CONDITION FOR COMPANY B", and "FUJI FILM STANDARD PRINTING CONDITION" set forth in a comment column. Those files which are marked with an attribute "ORG" in an attribute column represent files registered as system files
25 in the host computer 14 from the outset, and those files which are marks with an attribute "USR" represent files generated on the host computer 14 by the user. If the user

instructs the host computer 14 to register a file which has been recognized as the attribute "ORG" by the system, then a warning dialog is displayed, indicating to the user that the user cannot modify and register the file under the same
5 title.

[0049]

In a date column, dates of generation (updating) of files, e.g., ".../.../..." = "30/06/98", are displayed. Version numbers (version codes) of files are displayed in a
10 version column.

[0050]

In the displayed image shown in FIG. 5, when the user selects, with the mouse 24M, a folder "UNUSED%9_10%test-1" as from the left column, a folder "test-1" is opened, and a
15 file selection image 210 (FIG. 6) for selecting not-to-be-merged printing condition profiles 28 is displayed in step S3. Stated otherwise, bibliographical items of the files of the not-to-be-merged printing condition profiles 28 stored in the not-to-be-merged printing condition profile storage
20 area 58B are displayed on the display unit 26.

[0051]

In the file selection image 210 shown in FIG. 6, a file related to the title "SLIGHTLY COATED PAPER PRINTING" and a file related to the title "WOOD-FREE PAPER COLOR
25 REPRODUCTION" are displayed.

[0052]

Then, the user selects a desired not-to-be-merged

printing condition profile 28 in step S4. It is assumed that the user selects the file of the not-to-be-merged printing condition profile 28 under the title "SLIGHTLY COATED PAPER PRINTING", as highlighted in FIG. 6.

5 [0053]

Then, the user moves, with the mouse 24M, the row of the selected title "SLIGHTLY COATED PAPER PRINTING" from the right column to the folder "USED FOR OUTPUT" in the left column in step S5. The movement of the file to the folder "USED FOR OUTPUT" is determined by the movement decision unit 56B.

[0054]

At this time, a message "IS PRINTING CONDITION PROFILE OF SLIGHTLY COATED PAPER PRINTING TO BE MERGED WITH PRINTER CONDITION PROFILE ?" is displayed in the image. When the user clicks on an OK button (not shown), the merging processor 56A starts automatically merging the file with the printer condition profile in step S6.

[0055]

20 In the automatically merging process, the printing condition profile 28 and the printer condition profile 30 shown in FIG. 2 are merged with each other. Specifically, the contents of the file of the printing condition profile 28 under the title "SLIGHTLY COATED PAPER PRINTING" are read from the not-to-be-merged printing condition profile storage area 58B, and the printer condition profile 30 is read from the printer condition profile storage area 58C. Then, the

25

read printing condition profile 28 and the read printer
condition profile 30 are merged into a new merged profile
LUT 21 as an LUT as shown in FIG. 7. The new merged profile
LUT 21 serve to determine R, G, B image data outputted from
5 the color converter 20 as $(R, G, B) = (R1, G1, B1), (R2, G2,$
 $B2), (R3, G3, B3), \dots, (R98, G98, B98), (R99, G99, B99),$
 $(R100, G100, B100)$ with respect to combinations of C, M, Y,
K supplied from the raster image processor 18 to the color
converter 20, e.g., $(C, M, Y, K) = (0, 0, 0, 0), (0, 0, 0,$
10 $1), (0, 0, 0, 2), \dots, (99, 99, 100, 100), (99, 100, 100,$
 $100), (100, 100, 100, 100).$

[0056]

The image displayed on the display unit 26 is now
updated into an image 200' for selecting printing conditions
15 in step S7.

[0057]

In the image 200', the new merged profile LUT 21 under
the title "SLIGHTLY COATED PAPER PRINTING" is stored in the
merged profile storage area 58A corresponding to the
20 "PRINTING CONDITION USED FOR OUTPUT" folder, and the title
"SLIGHTLY COATED PAPER PRINTING" is displayed in the title
column of the image 200'. The user can select a desired
merged profile LUT 21 including the new merged profile LUT
21 to be established in the color converter 20 from the
25 image 200'.

[0058]

According to the present embodiment, as described

above, for confirming the colors of an image to be printed on a print sheet based on device-dependent input C, M, Y, K image data with the printer 16 before the image is actually printed by the printing machine, when the color converter 20 for converting device-dependent input C, M, Y, K image data to device-dependent R, G, B image data for the printer 16 comprises the merged profile LUT 21 which comprises, as shown in FIG. 2, the printing condition profiles 28 for converting the device-dependent input C, M, Y, K image data to device-independent image data X' , Y' , Z' in view of printing conditions, and the printer condition profile 30 for converting the device-independent image data X' , Y' , Z' to device-dependent R, G, B image data in view of output conditions of the printer 16, the color converter 20 has the merged profile storage area 58A which stores the merged profile LUT 21 as a file, the not-to-be-merged printing condition profile storage area 58B which stores the printing condition profiles 28 as not-to-be-merged files, and the printer condition profile storage area 58C which stores printer condition profile 30 as a file. The file moving means for moving files comprises the mouse 24M, the GUI 66, the display unit 26, and the profile manager 56, and the profile manager 56 has the merging processor 56A. When a merged printing condition profile 28 stored in the not-to-be-merged printing condition profile storage area 58B has been moved to the merged profile storage area 58A by the file moving means, the merging processor 56A automatically

merges the file of the printer condition profile 30 stored in the printer condition profile storage area 58C with the file of the moved printing condition profile 28, i.e., the file with the title "SLIGHTLY COATED PAPER PRINTING" in the illustrated embodiment, into a new merged profile LUT 21, and the new merged profile LUT 21 is stored in the merged profile storage area 58A.

[0059]

Since the merging process is automatically performed when the file is moved by the file moving means, the new merged profile LUT 21 (see also FIG. 7) for color conversion can simply and easily be generated.

[0060]

The merged profile LUT 21 is effective to convert device-dependent C, M, Y, K image data to device-dependent R, G, B image data for the printer 16 in one process within a short period of time.

[0061]

Inasmuch as only a desired printing condition profile (the printing condition profile under the title "SLIGHTLY COATED PAPER PRINTING" in the above embodiment) 28 can be merged, the period of time required for merging the printing condition profile is minimum. Furthermore, because only one new merged profile LUT 21 is generated from the desired printing condition profile, excessive merged profiles LUT 21 are prevented from being generated, and the memory capacity is not used in a wasteful manner. In this embodiment, the

process for generating one merged file takes anywhere between ten and twenty seconds, and the memory capacity for storing one merged profile LUT 21 is about 4 MB.

[0062]

5 Simply stated, when the file under the title "SLIGHTLY COATED PAPER PRINTING" as a printing condition profile 28 is dragged and dropped (moved) onto the folder "USED FOR OUTPUT", it is automatically merged with the file of the printer condition profile 30 into a new merged profile LUT
10 (color conversion table) 21 relative to "SLIGHTLY COATED PAPER PRINTING". The color conversion table 21 converts input C, M, Y, K image data to R, G, B image data for the color printer 16, and the printer 16 outputs a hard copy HC based on the R, G, B image data. In this manner, the user
15 can easily confirm the colors of a finished printed material according to "SLIGHTLY COATED PAPER PRINTING" with the colors of the image IM on the hard copy HC. Thus, the hard copy CH can be used as a color proof.

[0063]

20 Although certain preferred embodiments of the present invention have been shown and described in detail, it should be understood that various changes and modifications may be made therein without departing from the scope of the appended claims.

25 [0064]

[EFFECT OF THE INVENTION]

According to the present invention, as described above,
by moving files, the files of the printing condition color
converting means is automatically merged with files of a
output condition color converting means into a new file of a
5 merged color converting means. Therefore, files of a merged
color converting means for color conversion can easily be
generated in a simple operation.

[0065]

Because the file of the output condition color
10 converting means is automatically merged with only the file
of the printing condition color converting means that has
been moved to the storage area, into a new file of a merged
color converting means, only the desired file of the merged
color converting means can be generated.

15 [0066]

By using the file of the merged color converting means
thus generated, it is possible to convert device-dependent
input image data to device-dependent image data for a proof
image outputting device in one process. As a result, a
20 color converting process can be performed in a short period
of time.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[FIG. 1]

FIG. 1 is a block diagram of a proof system according
25 to an embodiment of the present invention.

[FIG. 2]

FIG. 2 is a block diagram of a printing condition

profile and a printer condition profile which have been merged and established in a color converter in the proof system shown in FIG. 1.

[FIG. 3]

5 FIG. 3 is a block diagram of an arrangement of a profile manager and a profile storage unit in the proof system shown in FIG. 1.

[FIG. 4]

10 FIG. 4 is a flowchart of a process for generating a new merged profile.

[FIG. 5]

 FIG. 5 is a view showing, by way of example, an image for selecting printing conditions.

[FIG. 6]

15 FIG. 6 is a view showing, by way of example, an image of an unused folder.

[FIG. 7]

 FIG. 7 is a diagram showing a merged profile LUT.

[FIG. 8]

20 FIG. 8 is a view showing, by way of example, an image for selecting printing conditions, which stores a new to-be-merged printing condition profile LUT.

[DESCRIPTION OF REFERENCE NUMERALS]

10: proof system

14: host computer

25 20: color converter

21: merged profile LUT

24: manual command input unit 24M: mouse

28: printing condition profile

30: printer condition profile 56: profile manager
 56A: merging processor 56B: movement decision unit
 56C: file manager 58: profile storage unit
 58A: merged profile storage area
 5 58B: not-to-be-merged printing condition profile storage
 area
 58C: printer condition profile storage area
 66: GUI 200, 200': image for selecting
 printing conditions
 10 210: file selection image for selecting not-to-be-merged
 printing condition profiles
 CP: color paper HC: hard copy
 IM: image

FIG. 1

10 14 HOST COMPUTER

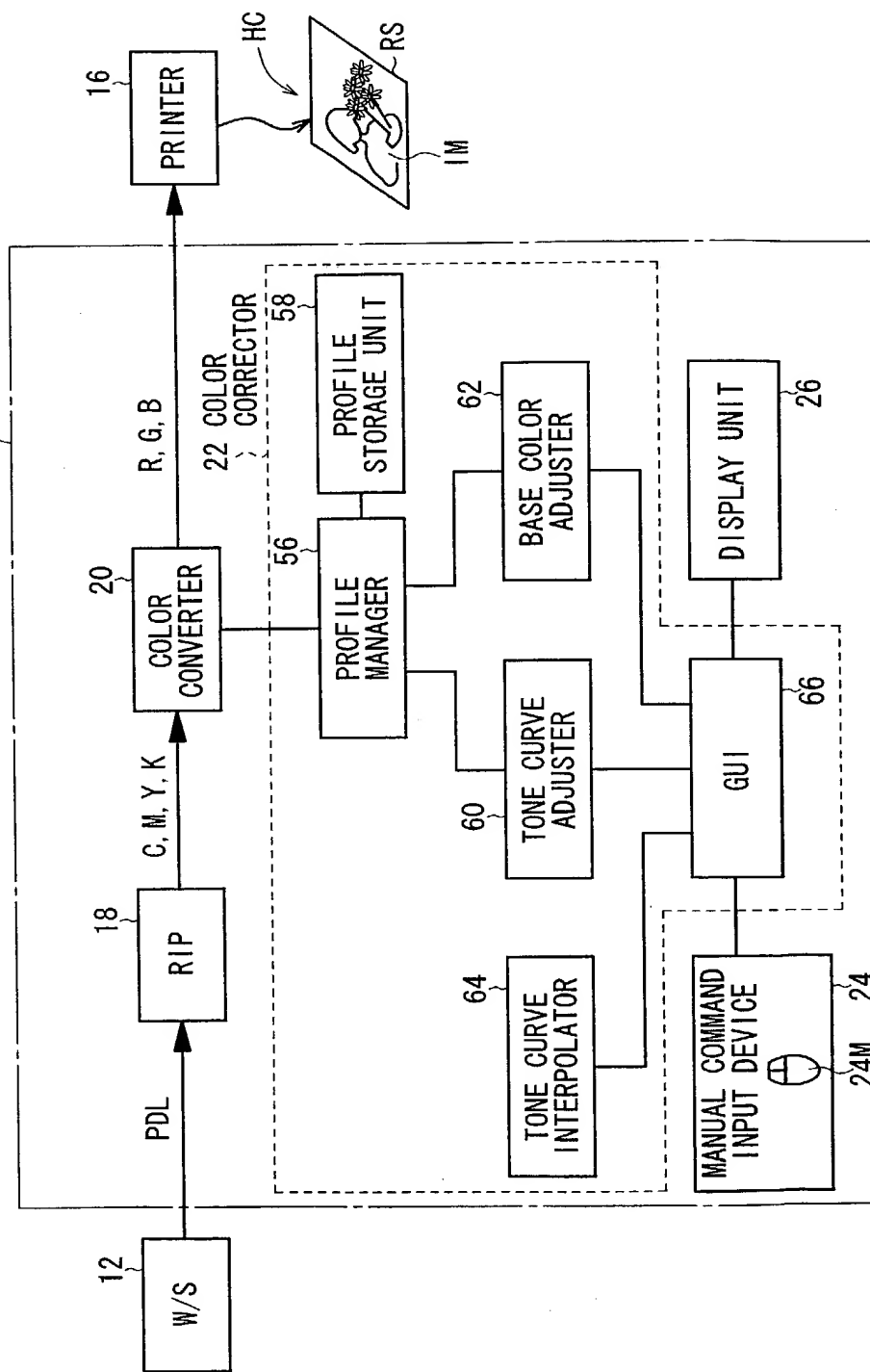


FIG. 2

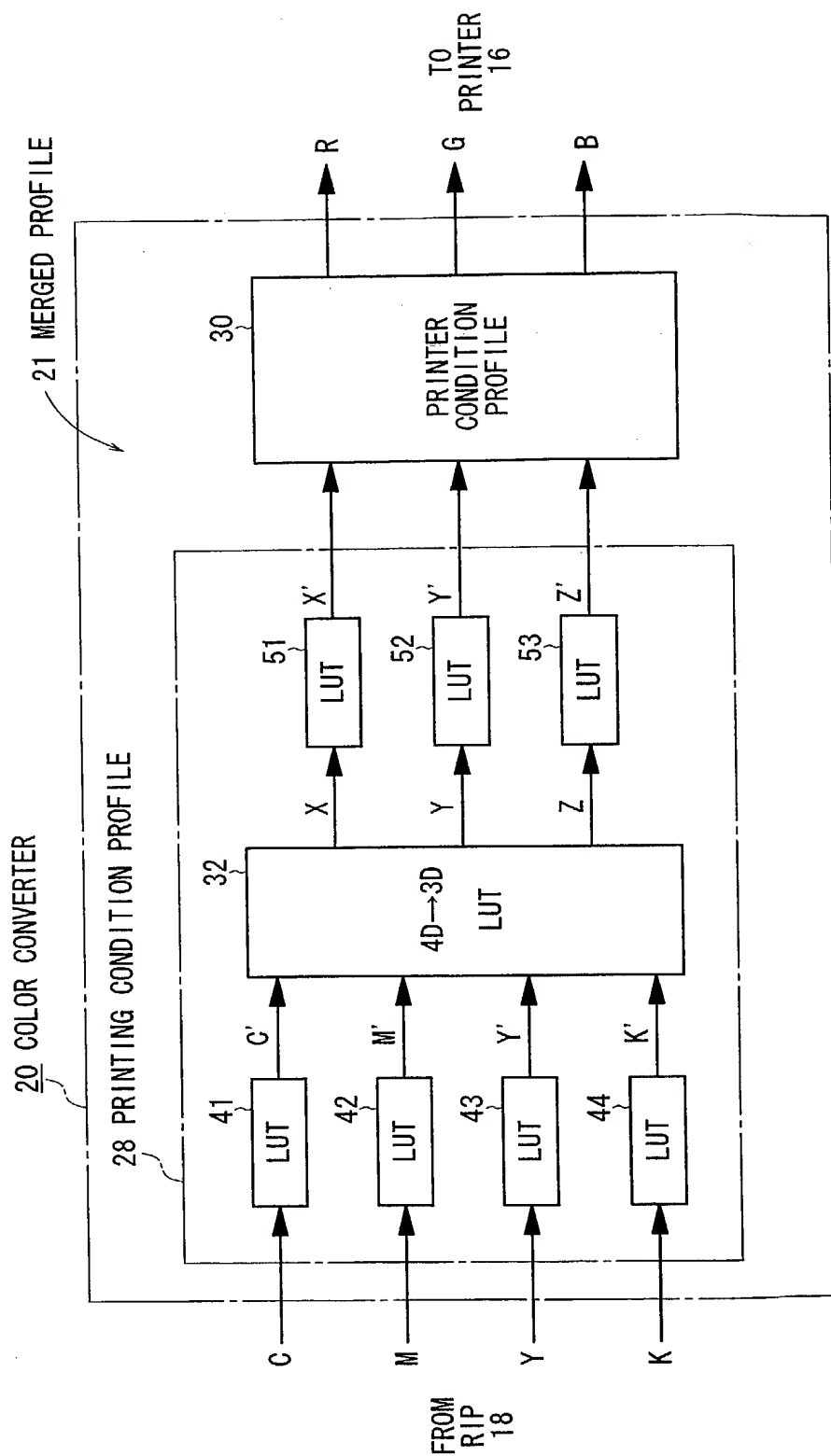


FIG. 3

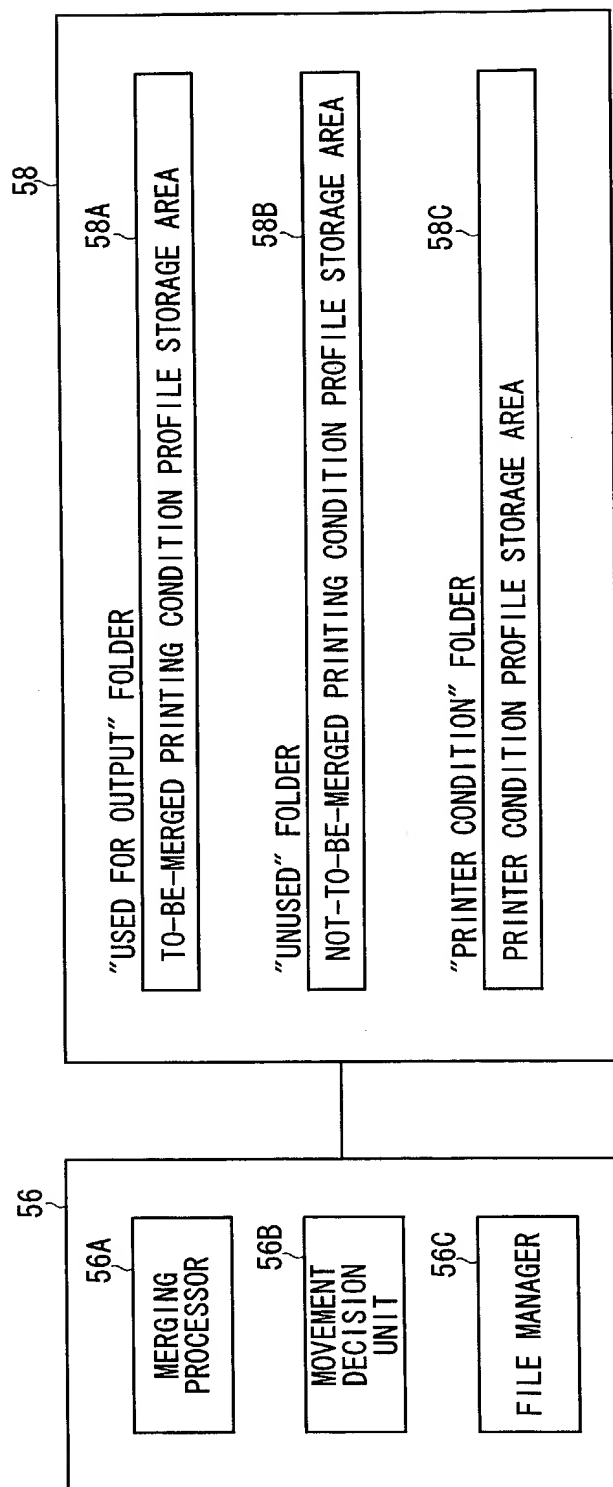
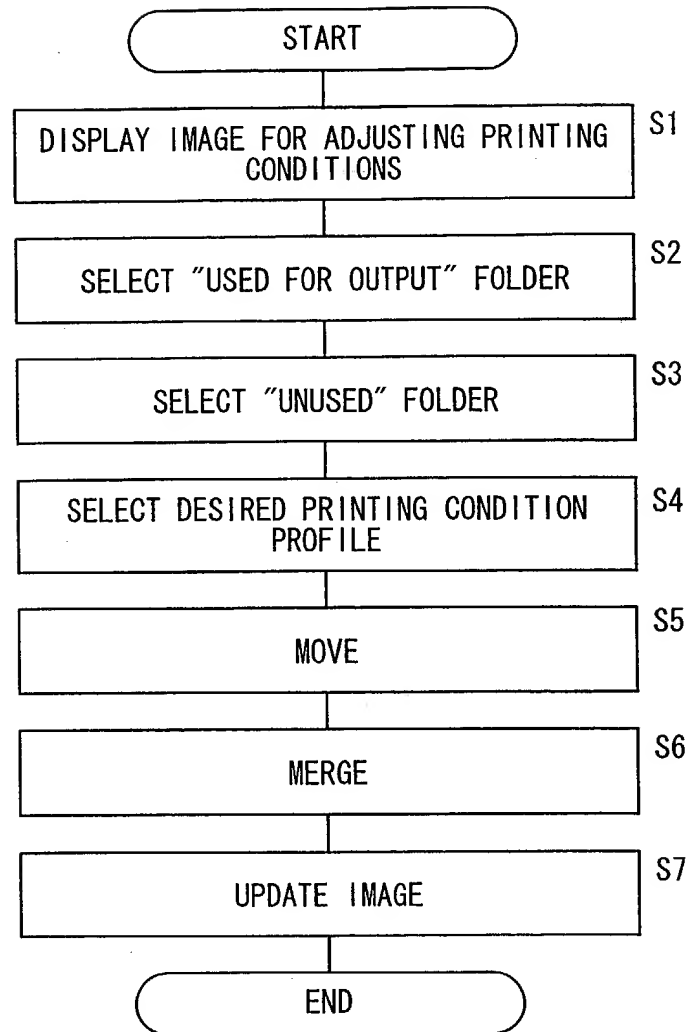


FIG. 4



200

[illegible]

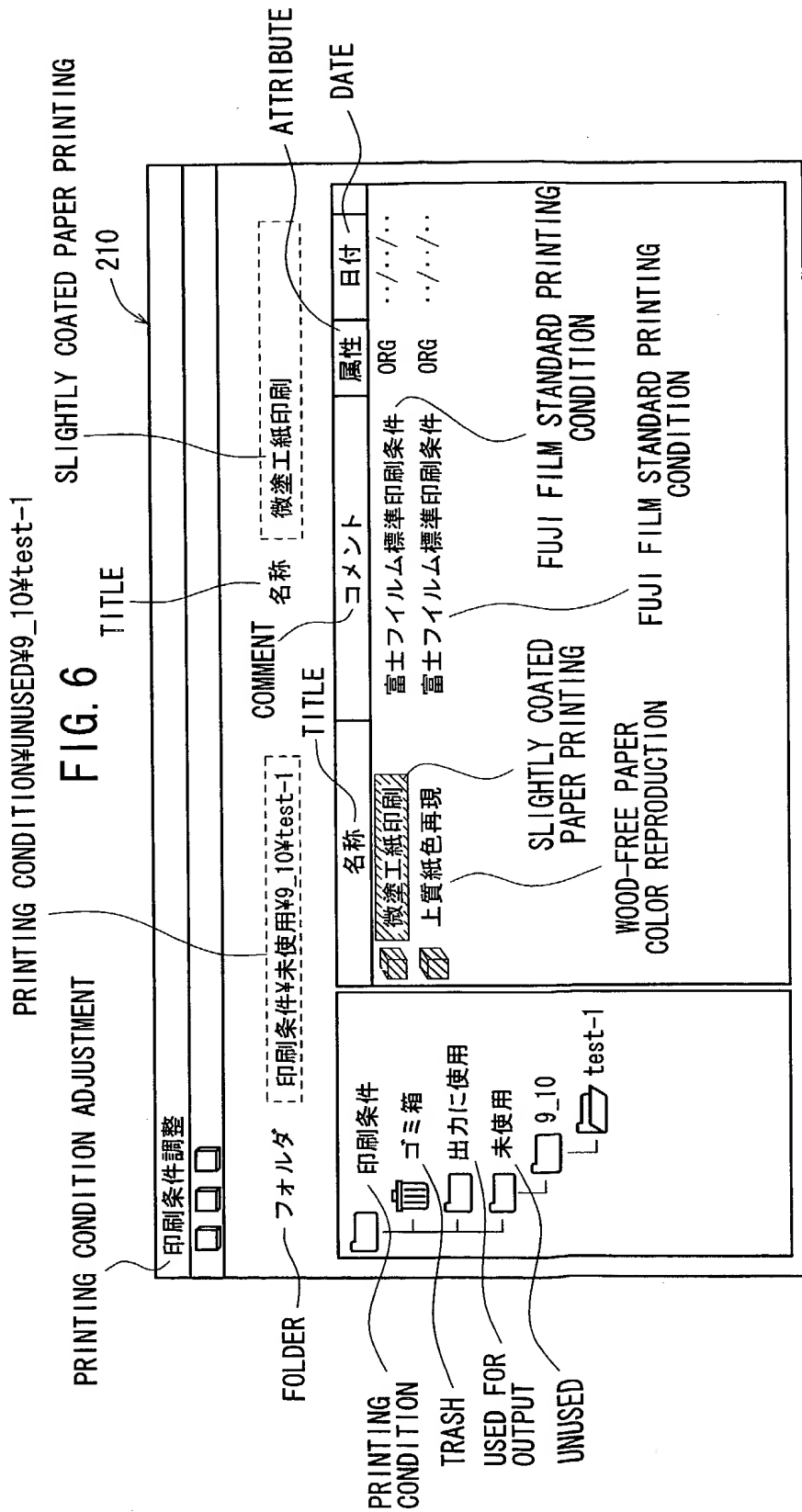


FIG. 7

21

INPUT				OUTPUT		
C	M	Y	K	R	G	B
0	0	0	0	R1	G1	B1
0	0	0	1	R2	G2	B2
0	0	0	2	R3	G3	B3
⋮	⋮	⋮	⋮	⋮	⋮	⋮
99	99	100	100	R98	R98	R98
99	100	100	100	R99	R99	R99
100	100	100	100	R100	R100	R100

FIG. 8

[illegible]

[DOCUMENT NAME] Abstract

[ABSTRACT]

[TASK] To easily generate a color conversion table as a LUT
in a simple operation by merging a printing condition
5 profile for color conversion and a printer condition
profile.

[SOLUTION] When a file under the title "SLIGHTLY COATED
PAPER PRINTING" as a printing condition profile is dragged
and dropped (moved) onto a folder "USED FOR OUTPUT" in a
10 file selection image 210 for selecting a not-to-be-merged
printing condition profiles, it is automatically merged with
the file of a printer condition profile into a new color
conversion table relative to "SLIGHTLY COATED PAPER
PRINTING". The color conversion table thus generated
15 converts input image data to image data for a proofer such
as a printer, and the printer outputs a hard copy based on
the converted image data. The user can easily confirm the
colors of a finished printed material according to "SLIGHTLY
COATED PAPER PRINTING" with the colors of the image on the
20 hard copy. Thus, the hard copy can be used as a color
proof.

[SELECTED FIGURE] FIG. 6

[Document Name] *Ex officio* Amendment Data

[Amended Document] Patent Application

[Recognized Information, Added Information]

[Applicant for Patent Application]

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